

Claims:

1. A bipolar electrosurgical instrument for cutting and coagulating tissue comprising:

(a) first and second blade members each comprising a laminated assembly of a metal blade defining a shearing surface, a metal blade support and an intermediate electrically insulative bonding/spacing layer for joining said blade to said blade support;

(b) means for pivotally joining said first and second blade members together with their respective shearing surfaces facing one another;

(c) means coupled to at least one of said first and second blade members for imparting a scissors-like movement relative to the other of said first and second blade members; and

(d) means for applying a voltage between the metal blade supports of said first and second blade members.

2. The bipolar electrosurgical instrument as in claim 1 wherein said shearing surfaces of said first and second blade members and said blade support are curved.

3. The bipolar electrosurgical instrument as in claim 2 wherein said intermediate, electrically insulating bonding/spacing layer is an epoxy material.

4. The bipolar electrosurgical instrument as in claim 3 wherein said epoxy material includes a fiberglass-mat of a predetermined thickness therein.
5. The bipolar electrosurgical instrument as in claim 3 wherein said metal is stainless steel.

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6. A bipolar electrosurgical instrument for cutting and coagulating tissue comprising, in combination:

(a) an elongated tubular member having a proximal end, a distal end and a lumen extending therebetween;

(b) first and second blade members each comprising a laminated assembly of a metal blade defining a shearing surface, a metal blade support and an intermediate electrically insulative bonding/spacing layer for joining said blade to said blade support;

(c) means for pivotally joining said first and second blade members to the distal end of said elongated tubular member with their respective shearing surfaces facing one another;

(d) a handle affixed to said proximal end of said tubular member;

(e) means coupled to said handle and extending through said lumen for imparting a scissors-like movement to at least one of said first and second blade members relative to the other; and

(f) means extending through said lumen for applying a voltage between said blade supports of said first and second blade members.

7. The bipolar electrosurgical instrument as in claim 6 wherein said intermediate electronically insulating bonding layer is an epoxy material.

8. The bipolar electrosurgical instrument as in claim 7 wherein said epoxy material includes a fiberglass mat of a predetermined thickness therein.

9. The bipolar electrosurgical instrument as in claim 6 wherein said first and second blade members are curved.

10. A bipolar electrosurgical instrument for cutting and coagulating tissue, comprising:

a) first and second blade members each comprising a laminated assembly of a metal blade defining a shearing surface, an intermediate electrically insulative layer, and a metal blade support which is electrically insulated from said metal blade by said intermediate electrically insulative layer;

b) means for pivotally joining said first and second blade members together with their respective shearing surfaces facing one another;

c) means coupled to at least one of said first and second blade members for imparting a scissors-like movement relative to the others of said first and second blade members; and

d) means for applying a voltage between the metal blade supports of said first and second blade members.

11. A bipolar electrosurgical instrument according to claim 10,
wherein:

said shearing surfaces of said first and second blade members
and said blade support are curved.

12. A bipolar electrosurgical instrument according to claim 11,
wherein:

said metal is stainless steel.

13. A bipolar electrosurgical instrument for cutting and coagulating tissue, comprising, in combination:

- a) an elongated tubular member having a proximal end, a distal end, and a lumen extending therebetween;
- b) first and second blade members, each comprising a laminated assembly of a metal blade defining a shearing surface, an intermediate electrically insulative layer, and a metal blade support which is electrically insulated from said metal blade by said intermediate electrically insulative layer;
- c) means for pivotally joining said first and second blade members together with their respective shearing surfaces facing one another;
- d) a handle affixed to said proximal end of said tubular member;
- e) means coupled to said handle and extending through said lumen for imparting a scissors-like movement to at least one of said first and second blade members relative to the other; and
- f) means extending through said lumen for applying a voltage between said blade supports of said first and second blade members.

14. A bipolar electrosurgical instrument for cutting and coagulating tissue, comprising:

a) first and second blade members each having an inner shearing surface and a conductive portion, at least one of said blade members comprising a laminated assembly of an inner metal blade defining said inner shearing surface, an intermediate electrically insulative layer, and an outer metal conductive layer forming said conductive portion which is electrically insulated from said inner metal blade by said intermediate electrically insulative layer;

b) means for pivotally joining said first and second blade members with their respective inner shearing surfaces facing one another;

c) means coupled to at least one of said first and second blade members for imparting a scissors-like movement relative to the others of said first and second blade members; and

d) means for applying a voltage between said outer conductive portions of said first and second blade members.

15. A bipolar electrosurgical instrument according to claim 14, wherein:

said inner shearing surfaces of said first and second blade members are curved.

16. A bipolar electrosurgical instrument according to claim 14, wherein:

said metal is stainless steel.

17. A bipolar electrosurgical instrument according to claim 14, wherein:

each of said first and second blades members comprises a laminated assembly of an inner metal blade defining said inner shearing surface, an intermediate electrically insulative layer, and an outer metal conductive layer forming said conductive portion which is electrically insulated from said inner metal blade by said intermediate electrically insulative layer.

18. A bipolar electrosurgical instrument according to claim 14, wherein:

said intermediate electrically insulative layer is a ceramic element and said inner metal blade and said outer metal conductive layer are affixed layers on said ceramic element.

19. A bipolar electrosurgical instrument according to claim 14, wherein:

said outer metal conductive layer is a relatively thick metal support member, said intermediate electrically insulative layer is a ceramic layer affixed to said support member, and said inner metal blade is a metal layer affixed on said ceramic layer.

20. A bipolar electrosurgical instrument for cutting and coagulating tissue, comprising, in combination:

- a) an elongated tubular member having a proximal end, a distal end, and a lumen extending therebetween;
- b) first and second blade members each having an inner shearing surface and a conductive portion, at least one of said blade members comprising a laminated assembly of an inner metal blade defining said inner shearing surface, an intermediate electrically insulative layer, and an outer metal conductive layer forming said conductive portion which is electrically insulated from said inner metal blade by said intermediate electrically insulative layer;
- c) means for pivotally joining said first and second blade members with their respective inner shearing surfaces facing one another;
- d) a handle affixed to said proximal end of said tubular member;
- e) means coupled to said handle and extending through said lumen for imparting a scissors-like movement to at least one of said first and second blade members relative to the other; and
- f) means extending through said lumen for applying a voltage between said conductive portions of said first and second blade members.

21. A bipolar electrosurgical instrument according to claim 20, wherein:

each of said first and second blades members comprises a laminated assembly of an inner metal blade defining said inner shearing surface, an intermediate electrically insulative layer, and an outer metal conductive layer forming said conductive portion which is electrically insulated from said inner metal blade by said intermediate electrically insulative layer.

22. A bipolar electrosurgical instrument according to claim 20, wherein:

said intermediate electrically insulative layer is a ceramic member and said inner metal blade and said outer metal conductive layer are metal layers affixed to said ceramic member.

23. A bipolar electrosurgical instrument according to claim 20, wherein:

said outer metal conductive layer is a relatively thick metal support member, said intermediate electrically insulative layer is a ceramic layer affixed to said support member, and said inner metal blade is a metal layer affixed to said ceramic layer.

24. An endoscopic scissor blade for use in a bipolar endoscopic instrument, said blade comprising:

- a) an inner metal shearing surface;
- b) an intermediate electrically insulative layer;
- c) an outer metal conductive layer which is electrically insulated from said inner metal shearing surface by said intermediate electrically insulative layer; and
- d) means for coupling a source of voltage to said outer metal conductive layer.

25. An endoscopic scissor blade according to claim 24, further comprising:

- e) means for pivotally mounting said scissor blade; and
- f) means for coupling said scissor blade to a means for imparting a pivotal movement to said scissor blade.

26. An endoscopic scissor blade according to claim 24, wherein:

said intermediate electrically insulative layer is a ceramic member and said inner metal shearing surface and said outer metal conductive layer are metal layers affixed on said ceramic member.

27. An endoscopic scissor blade according to claim 24, wherein:

said outer metal conductive layer is a relatively thick support member, said intermediate electrically insulative layer is a ceramic layer affixed to the support member, and said inner metal blade is a metal layer affixed to said ceramic layer.

28. An endoscopic scissor blade according to claim 24, wherein:

said intermediate electrically insulative layer is a fiberglass blade support and said inner metal shearing surface and said outer metal conductive layer are laminated layers on said fiberglass blade support.

29. An endoscopic scissor blade according to claim 24, wherein:

said intermediate electrically insulative layer is a thin coating on said inner metal shearing surface and said outer metal conductive layer is a thin metal coating affixed to said insulative layer.

30. A bipolar electrosurgical scissors comprising:

a) first and second blade members each comprising an assembly of a metal shearing surface, an electrically conductive electrode, and an intermediate electrically insulative material disposed between and fixed to the metal shearing surface and the electrically conductive electrode;

b) means coupled to at least one of said first and second blade members for imparting scissors-like movement relative to the other of said first and second blade members; and

c) means for applying a voltage between the electrically conductive electrodes of said first and second blade members.

31. A bipolar electrosurgical scissors according to claim 30, wherein:

said metal shearing surfaces of said first and second blade members are curved.

32. A bipolar electrosurgical scissors according to claim 31, wherein:

said intermediate, electrically insulative material is an epoxy material.

33. A bipolar electrosurgical scissors according to claim 32,
wherein:

said epoxy material includes a fiberglass-mat of a
predetermined thickness therein.

34. A bipolar electrosurgical scissors according to claim 32
wherein:

at least one of said metal shearing surface and said
electrically conductive electrode is made of stainless steel.

35. A bipolar electrosurgical scissors comprising:

a) first and second blade members each comprising an assembly of a metal shearing surface, an electrically conductive electrode, and an intermediate electrically insulative layer disposed between and affixed to the metal shearing surface and the electrically conductive electrode, at least one of said first and second blade members having a pivot hole for mounting it relative to the other of said first and second blade members to allow a scissor-like movement of said at least one of said first and second blade members relative to the other of said first and second blade members;

b) a reciprocating member coupled to said at least one of said first and second blade members and imparting scissor-like movement to said at least one of said first and second blade members relative to the other of said first and second blade members; and

c) first and second electrically conductive members coupled to respective electrically conductive electrodes and applying a voltage between the electrically conductive electrodes of said first and second blade members.

36. A bipolar electrosurgical scissors according to claim 35, wherein:

said metal shearing surfaces of said first and second blade members are curved.

37. A bipolar electrosurgical scissors according to claim 36,
wherein:

said intermediate, electrically insulative layer is an epoxy
material layer.

38. A bipolar electrosurgical scissors according to claim 37,
wherein:

said epoxy material includes a fiberglass-mat of a
predetermined thickness therein.

39. A bipolar electrosurgical scissors according to claim 37,
wherein:

at least one of said metal shearing surface and said
electrically conductive electrode is made of stainless steel.